

REMARKS

Claims 1-15 are pending. No new matter has been added by way of the present submission. For instance, claims 1, 4 and 7 have been amended to correct an inadvertent typographical error. The original papers described the three-layered structure $\text{Al}_y\text{In}_x\text{Ga}_{1-x,y}\text{N}/\text{In}_x\text{Ga}_{1-x}\text{N}/\text{GaN}$; however, the " $\text{Ga}_{1-x,y}$ " portion was an inadvertent typographical error understood by those of skill in the art and should have correctly recited " $\text{Ga}_{1-(x+y)}$ ". Therefore, claims 1, 4 and 7 were amended to correctly recite " $\text{Al}_y\text{In}_x\text{Ga}_{1-(x+y)}\text{N}/\text{In}_x\text{Ga}_{1-x}\text{N}/\text{GaN}$ ". Parallel corrections were made to the specification and the Abstract of the Disclosure. Additionally, the values for "x" for the three-layered structure and the superlattice structure have been amended such that $0 < x \leq 1$ in each of claims 1, 4 and 7. Also, an inadvertent typographical error in claim 9 has been corrected. A parallel correction has also been made to the specification. Lastly, new claims 12-15 are supported by originally filed claims 8 and 9. Accordingly, no new matter has been added.

In view of the following remarks, Applicant respectfully requests that the Examiner withdraw all rejections and allow the currently pending claims.

Issues under 35 U.S.C. § 102(e)

The Examiner has rejected claims 1 and 7 under 35 U.S.C. § 102(e) as being anticipated by Shakuda, U.S. Publication No. 2002/0125492 (hereinafter referred to as Shakuda '492). Applicant respectfully traverses this rejection.

Both independent claims 1 and 4 require a GaN-based buffer layer formed on the substrate in any one selected from a group consisting of:

- (1) a three-layered structure $\text{Al}_y\text{In}_x\text{Ga}_{1-(x+y)}\text{N}/\text{In}_x\text{Ga}_{1-x}\text{N}/\text{GaN}$ where $0 < x \leq 1$ and $0 \leq y \leq 1$,
- (2) a two-layered structure $\text{In}_x\text{Ga}_{1-x}\text{N}/\text{GaN}$ where $0 \leq x \leq 1$, and
- (3) a superlattice structure of $\text{In}_x\text{Ga}_{1-x}\text{N}/\text{GaN}$ where $0 < x \leq 1$.

Therefore, the present invention's GaN-based buffer layer (see 110 in Fig. 1 (a) and (b)) is one selected from a three-layered structure $\text{Al}_y\text{In}_x\text{Ga}_{1-(x+y)}\text{N}/\text{In}_x\text{Ga}_{1-x}\text{N}/\text{GaN}$, a two-layered structure $\text{In}_x\text{Ga}_{1-x}\text{N}/\text{GaN}$, and a superlattice structure of $\text{In}_x\text{Ga}_{1-x}\text{N}/\text{GaN}$.

Shakuda '492 discloses a light emitting device that employs a GaN type compound semiconductor. However, the buffer layers 23 and 24 of Shakuda '492 are low-temperature GaN and high-temperature GaN buffer layers, respectively. Further, Shakuda '492 fails to suggest or disclose either a $\text{Al}_y\text{In}_x\text{Ga}_{1-(x+y)}\text{N}$ layer or a $\text{In}_x\text{Ga}_{1-x}\text{N}$ layer for the buffer layer 23,24. Accordingly, the buffer layer 23, 24 of Shakuda '492 is distinct from the presently claimed buffer layer. Moreover, Shakuda '492 contains no disclosure to suggest the presently claimed subject matter. Accordingly, there exists no anticipation. Reconsideration and withdrawal of this rejection are respectfully requested.

Issues under 35 U.S.C. § 103(a)

The Examiner has rejected claims 2-3 and 10-11 under 35 U.S.C. § 103(a) as being obvious over Shakuda '492 in view of Kano et al., U.S. Publication No. 2001/0035531 (hereinafter referred to as Kano '531). Applicant traverses.

Distinctions between the present buffer layer and the disclosure of Shakuda '492 were discussed above. The secondary reference of Kano '531 is unable to cure these deficiencies. For

instance, Kano '531 fails to suggest either a $\text{Al}_y\text{In}_x\text{Ga}_{1-(x+y)}\text{N}$ layer or a $\text{In}_x\text{Ga}_{1-x}\text{N}$ layer.

Accordingly, since the cited art as a whole fails to suggest or disclose the presently claimed buffer layer, there exists no *prima facie* case of obviousness. This rejection is therefore improper and should be withdrawn.

The Examiner has also rejected claims 4-6 under 35 U.S.C. § 103(a) as being obvious over Doverspike et al., USP 6,459,100 (hereinafter referred to as Doverspike '100) in view of Shakuda '492. Applicant respectfully traverses this rejection.

The primary reference of Doverspike '100 fails to suggest or disclose the buffer layer of the present invention. This was admitted by the Examiner at page 4, line 20 - page 5, line 2 of the outstanding Office Action. This failure of Doverspike '100 extends to the presently claimed buffer layer. The Examiner has attempted to supplement the deficient disclosure of Doverspike '100 with the teachings of Shakuda '492. However, Applicant points out that distinctions between the present buffer layer and the cited art of Shakuda '492 were discussed above. Claim 4 of the present invention requires the same limitations as claims 1 and 7 regarding the buffer layer and thus differs from Shakuda '492 for the same reasons as discussed above. Accordingly, there exists no *prima facie* case of obviousness.

In view of the above, Applicant respectfully submits that the present claims define allowable subject matter. Accordingly, the Examiner is respectfully requested to withdraw all rejections and allow the currently pending claims.

If the Examiner has any questions or comments, please contact Craig A. McRobbie, Registration No 42,874 at the offices of Birch, Stewart, Kolasch & Birch, LLP.


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If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to our Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under § 1.17; particularly, extension of time fees.

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Respectfully submitted,

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